



VRIJE
UNIVERSITEIT
BRUSSEL

Joint programme with

The background of the poster is a composite image. On the right side, there is a close-up portrait of a young woman with long, dark hair, looking slightly to the side with a gentle smile. On the left side, there is a blurred image of a waterfall cascading over rocks in a lush green setting. A diagonal white line separates the two images, running from the top left towards the bottom right.

MASTER
OF SCIENCE IN
**CIVIL
ENGI
NEERING**

www.vub.ac.be/civil-engineering
www.bruface.eu

**120
ECTS**

2018-2019

WHY VUB

VUB education delivers strong individuals, critical minds and world citizens

Vrije Universiteit Brussel (VUB) offers high-quality English-taught programmes, supported by outstanding research. Being a student at VUB means learning in an open atmosphere of tolerance and diversity, as well as growing into an independent and critical-thinking individual.

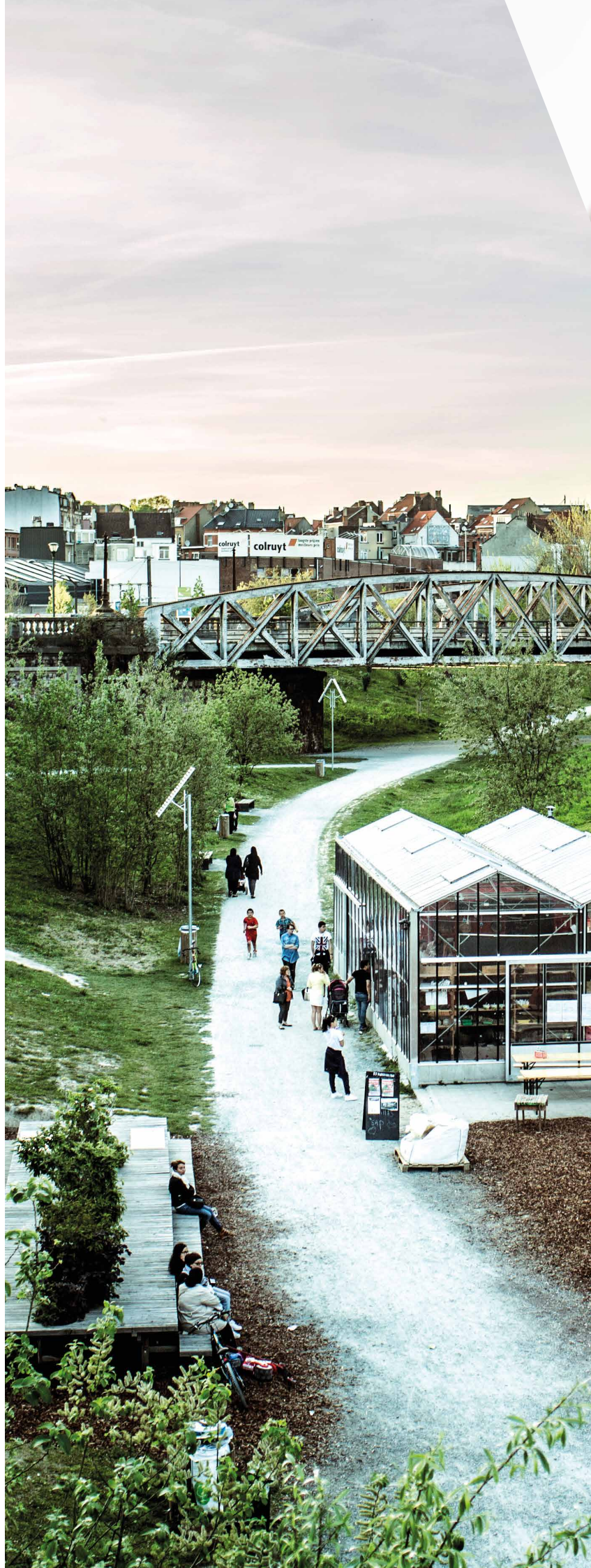
All fields of study are offered on four student-friendly campuses in the cosmopolitan city of Brussels. At VUB, students have easy access to their lecturers and assistants. Faculty members are available and open to answer questions; small group workshops are used to ensure close interaction and hands-on experience.

VUB is a dynamic and modern university with almost two centuries of history. We welcome 15.000 students, 21% of which are international students from more than 120 different countries.

The basis of our academic success

Vrije Universiteit Brussel was founded on the principle of 'free inquiry' as formulated by the French mathematician and philosopher of science Henri Poincaré (1854-1912): *"Thinking must never submit itself, neither to a dogma, nor to a party, nor to a passion, nor to an interest, nor to a preconceived idea, nor to anything whatsoever, except to the facts themselves, because for it to submit to anything else would be the end of its existence."*

Personal growth, with a positive and critical attitude, in addition to a sense of responsibility and open-mindedness are characteristics that you will encounter in everyone at the university: from professors and researchers to students and staff members. It lies at the heart of our academic success.





Civil engineers: more than concrete!

Are you interested in shaping a sustainable world, in planning, designing or constructing the built and natural environment, and changing the lives of millions of people for the better? Are you interested in becoming a master innovator, creating breakthroughs in scientific and technological research, or a leader in the decision-making process? Are you interested in acquiring the knowledge, skills and attitudes to be able to do this? If the answer is 'yes', then the Master of Science in Civil Engineering at VUB, in the multicultural capital of Europe, is perfect for you.

The civil engineering curriculum will provide you with the fundamental knowledge related to mathematics, physics and mechanics. It will train you to become skilful in applying engineering tools, in communication and in functioning in a multidisciplinary environment, with a respectful, tolerant and critical attitude and commitment to ethics. Our programme will allow you to become a competent engineer, with a broad range of technical and scientific knowledge, while also developing the right skills and attitudes. Focusing on the design and analysis of advanced structures, on building materials and on water resources management, the programme provides you with a broad common knowledge that can be refined according to your preferences. Whatever you choose, you'll be sure to receive a high-end education, tailored to your preferences and adapted to the latest evolutions in the scientific world.

MASTER OF SCIENCE IN CIVIL ENGINEERING

A focus on advanced structures and water resources management

A major objective of our programme is to develop an in-depth understanding of the main aspects of analysis and design of all kinds of constructions and to provide a solid knowledge of material technology. An important issue is the optimisation of the form of structures and the material selection, with due consideration of their environmental impact, sustainability and life-cycle cost.

Several systems are considered: conventionally reinforced or pre-stressed, either in steel or concrete, as well as those composed of novel materials like fibre-reinforced material systems. You can also wish to specialise in water resources. Courses on different aspects of water resources management (rivers, urban water, groundwater, water quality) are offered in close collaboration with our Master of Water Resources Engineering programme.

Links to research and to stakeholders

In Belgium, all master programmes must be embedded in the research carried out by the professors. Generally, this research is conducted in close collaboration with stakeholders: various industrial organisations in all branches of engineering, including materials suppliers, consultants, contractors and public service organisations. Engineers from industry are also involved in teaching. All this provides an exciting and industrially relevant environment to study in, while also providing prospects for employment.

Research in the field of structures and materials has a clear focus on the development, mechanical characterisation and design and analysis of innovative lightweight material systems and constructions. The mechanical performance of these material systems and constructions is studied under complex loading conditions by means of (combined) experimental testing and advanced numerical modelling. Non-destructive testing and structural health monitoring is also an important research topic.

Research in the field of water resources management at VUB focuses on the development of numerical simulation tools that are used in the field. All the professors have extensive international experience with water projects, including projects in Africa, South America and Asia.

Skills, knowledge and individuality

Engineers should also possess the skills that allow them to address a problem in a professional way, to be able to collect and process the necessary information efficiently, and to formulate and implement a solution method. This is why our programme provides the knowledge and skills to critically carry out research, preferably in a team. Our training also provides engineers with the skills and attitudes to play a responsible, prominent and leading role in realising construction projects, while understanding how this all relates to social and environmental issues.

Your first steps on the job market

The variation within the civil engineering fields creates a wide choice of careers. Some graduates work in small consulting firms, including those specialising in structural, environmental, municipal and geotechnical engineering, while some work in larger firms that encompass several branches of civil engineering. Others work for the government or have started their own businesses. Graduates in civil engineering can work all over the world, as consultants with their own businesses, as employees of large international companies, or as volunteers in developing countries. VUB helps you take your first steps on the job market with workshops, networking events, job fairs and tips for job interviews. It's all an ambitious student needs!





MASTER YEAR 1

	ECTS
Design of concrete structures	5
Experimental techniques for testing, non-destructive techniques & structural health monitoring	5
Design of steel structures	5
Multidisciplinary project in civil engineering	11
Research methods in civil engineering	4
Pre-stressed concrete	4
Geotechnical engineering	6
Non-linear modelling of materials & structures	5
Structural analysis & finite elements	5
Dynamics of structures	4
Surface water hydrology	6

MASTER YEAR 2

	ECTS
Compulsory courses	16
Option 1: Structures	
Option 2: Construction & geo-materials	
Option 3: Water resources	
Electives related to:	20
Structures	
Construction & geo-materials	
Water resources	
Management, economics & law	
Miscellanea	
Internship (40 or 60 days)	
Master Thesis	24

The programme is subject to change.
 Check www.vub.ac.be/en for the latest information.

ECTS (European Credit Transfer System):
 1 credit represents 25-30 hours of study activity.

ELECTIVE COURSES

The courses in the first year provide the student with the basics that are essential for someone with the title of civil engineer (concrete, steel, geotechnics, numerical modelling, experimental techniques and project work). With these basics acquired, the students can tailor their second year according to their interests.

INTERNSHIPS

Among the optional courses, students can choose an internship of 40 or 60 days, which takes place during the second year. This allows students to gain a first working experience in a company or a research centre of their choice, as they choose and contact the company themselves.

CIVIL ENGINEERS IN BELGIUM

In Belgium, a civil engineer (abbreviated "ir") is a legally protected title applicable to graduates of five-year engineering programmes at a university. Their speciality can be in all fields of engineering: civil, electrical, mechanical, chemical, physics, computer science...

The use of this title may cause confusion to English-speakers, as the Belgian civil engineer can have a speciality other than civil engineering. Belgians use the adjective "civil" to make a distinction from military engineers. The training of a civil engineer has a strong mathematical and scientific base and is more theoretical in approach than the practice-oriented industrial engineer (abbreviated "ing").

STUDY IN BRUSSELS

We encourage our students to become “reasonably opinionated” individuals with an open, inquiring mind, who reject prejudice to discover their own way of learning. We hope our students will turn into world citizens, committed to a sustainable, humanist society.

BRUFACE

Our programme is taught in English and organised by the Brussels Faculty of Engineering (Bruface). Bruface is a joint initiative of the VUB – a university of the Flemish Community – and the ULB – a university of the French-speaking Community. Both are within the top 5% of universities worldwide. At the end of your studies, you will receive a joint diploma.

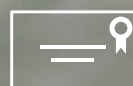
Bruface gives students space to breathe, quite literally. The buildings are spread out across two adjacent green campuses. There are modern sports facilities with sports halls, tennis and squash courts, fitness rooms and a swimming pool on site. The student restaurant offers meals and snacks at the self-service counters, while laboratories are all fitted with the most up-to-date equipment.



40 students in master year 1



Full English-taught programme



Joint degree from 2 universities



STUDY IN A LABORATORY WITH A PIONEERING SPIRIT

Every day, new technologies and scientific breakthroughs make the headlines. It's precisely why being an engineer is so exciting: you can help shape the world we live in. We are keenly aware of this, which is why our engineering programmes are considered to be among the best, as is the scientific research of our many research groups. Do you want to be where the action is? Then enrol in the Faculty of Engineering at VUB – the first faculty in Flanders to have a female dean. It's yet another example of our pioneering spirit.

... IN THE MULTILINGUAL CAPITAL OF EUROPE

With its international institutions, companies and embassies, Brussels is the beating heart of Europe: 45 nationalities (of more than 1,000 people each) and more than 100 languages spoken. About 70,000 students study in Brussels, and Belgian education is internationally renowned for its high standards.

SEVEN REASONS TO STUDY AT BRUFACE

- VUB and ULB have excellent quality records
- Ideal student group sizes and excellent student-staff contact
- Reasonable tuition fees and cost of living compared to many large European cities
- All buildings of ULB and VUB campuses are within walking distance
- Green campuses 15 minutes from the city centre via public transport
- Brussels is the capital of Europe, a multilingual and multicultural city
- International student population

ADMISSION CRITERIA

Admission is based on the review of each application: proof of meeting academic and language requirements, personal motivation, etc.

LANGUAGE REQUIREMENTS

Prospective students can provide proof of sufficient knowledge of English as language of instruction by meeting one of the following criteria:

- having successfully completed one of the following language proficiency tests:
 - TOEFL: minimum level: 213 for the computer-based test (CBT); 72 for the internet-based test (IBT); 550 for paper-based test
 - TOEIC: minimum level: 785
 - IELTS: minimum level academic module 6
 - CAE: minimum grade B
 - CPE: minimum grade C
 - ITACE for Students certificate with ERK/CEFR score B2
 - Cambridge English First (FCE)
 - Cambridge English: Business Vantage (BEC Vantage)
 - Cambridge Michigan ECCE
 - Trinity College London: ISE II, GESE Grade 7-9; or ALTE Q mark
 - The Pearson Test of English General (PTE General): minimum level 3
 - The Pearson Test of English Academic (PTE Academic): minimum level 59

- having successfully completed at least one year of secondary education with English as language of instruction, or having successfully completed secondary school in a Belgian institution;
- having successfully completed programme units in higher education with a minimum of 54 ECTS-credits where English was the language of instruction.

For more details on admission requirements and application: www.bruface.eu

SPECIFIC ADMISSION CRITERIA

Direct enrolment for this study plan is possible after having obtained a bachelor degree in engineering or engineering technology in Flanders. Admission decisions for students from other institutions are based on evaluation of a complete application file by the curriculum council.

Application deadline

Prospective students are advised to apply as soon as possible, even if they have not yet obtained their degree. Applications can only be submitted through our website www.bruface.eu

- Students who require a visa (non-EU/EEA nationals) need to submit their pre-application before March 24th
- Students who do not require a visa must submit their pre-application before September 12th
- Note: if the proof of English proficiency or APS certificate is not ready before the deadline, you can submit it later rather than miss the deadline

Tuition fees

Students pay the tuition fee at the institution at which they enrol, in agreement with the institution's legal requirements. The tuition fee for the non-EU students is recalculated yearly and jointly by both institutions, taking into account the legislation in both regions. Indication of tuition fee: 800 - 3000 euro per year. A detailed overview of the tuition fees can be found on www.bruface.eu

Contact

www.bruface.eu
www.vub.ac.be/civil-engineering